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EXAMINER

KUBELIK, ANNE R

ART UNIT PAPER NUMBER

1638

DATE MAILED: 09/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/668,322

Applicant(s)

SAVIDAN ET AL.

Examiner

Anne R. Kubelik

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 10 August 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 10-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/375,415.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's election with traverse of Group I (claims 1-9) in the reply filed on 10 August 2005 is acknowledged. The traversal is on the ground(s) that that it would not be an undue burden to search all claims. This is not found persuasive. It would be an undue burden to search all groups. For example, a search on nucleotide sequences responsible for apomictic development in any plant would not necessarily find art on methods mapping those sequences in a Gramineae.

The requirement is still deemed proper and is therefore made FINAL.

Claims 10-24 are withdrawn from consideration as being drawn to nonelected sequences.

2. The drawings are objected to nothing can be made out in Fig 4A-D.

3. The priority claim listed in the Application data sheet, in which parent application is listed as a 371 of PCT/FR98/00308, is improper. In the preliminary amendment filed 17 August 1999 with the 09/375,415 application, the following was included: "Amend the specification by inserting before the first line the following sentence: This application is a ... continuation-in-part National stage application of PCT/FR98/00308, filed February 17, 1998."

Claim Objections

4. Claims 8-9 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

5. Claims 1-7 are objected to because of the following informalities:

An article is missing at the start of claims 1-7.

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There should be no comma after "located" in claim 6, line 3.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contain subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are broadly drawn to a method for mapping in any Gramineae.

The instant specification, however, only provides discussion of mapping RFLP markers (umc28, csu68, umc38, umc71, umc134 and umc62) to *Apo* (apomeiosis) in *Tripsacum* (pg 14-17); mapping 2 RFLP markers (csu68 and cdo202) to *el* (*elongate*) in maize (pg 17-21); transposon tagging the *elongate* locus (pg 19 and 21); and a start at walking to *elongate* (pg 23-26).

The instant specification fails to provide guidance for the sequences of the RFLP markers used in the specification, or for any RFLP markers that function in other Gramineae.

Additionally, there is no evidence that the *elongate* mutant is apomictic. Rhodes et al (1966, Genetics 54:505-522) teaches that *el* plants produce both reduced and unreduced eggs, but not that they are apomictic. These mutants have been used to produce 4N plants (see, e.g.,

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Kamps et al, 1996, 142:1001-1007), which would not be possible if the *el* plants produced apomictic seed.

Given the claim breath, state of the art, and lack of guidance in the specification as discussed above, the instant invention is not enabled.

8. Claims 1-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are broadly drawn to use of a multitude of nucleic acids that map mutations would be "orthologous to genes involved in apomixis", including mutations that are responsible for diplospory in *Tripsacum*. Applicant does not describe any nucleic acids encompassed by the claims, and the structural and functional features that distinguish all such nucleic acids from other nucleic acids are not provided.

Because the sequences are not described, the method of using the sequences to map mutations would be "orthologous to genes involved in apomixis" is likewise not described, and the specification fails to provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the structural and functional characteristics of the compositions used in the claimed methods, it is not clear that Applicant was in possession of the claimed genus at the time this application was filed.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Dependent claims are included in all rejections.

Claims 1-7 are indefinite because they fail to recite active, positive method steps.

Method steps should be written in gerund form.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 1-3 recite the broad recitation, "Gramineae", and the claims also recite "more particularly ... maize" which is the narrower statement of the range/limitation.

Claim 5 is indefinite in its recitation of "relates to the ... loci". It is not clear in what manner the location relates to those loci. Does Applicant mean that the location is the *elongate* and *afid* loci? If that is the case, how can one location be two loci?

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It is not clear in claim 6 where tagging occurs relative to mapping.

Claim 6 lacks antecedent basis for the limitation "the meiotic mutations" in parent claim 1.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Leblanc et al (1995, Theor. Appl. Genet. 90:1198-1203) taken with the evidence of the instant specification.

Leblanc et al used RFLPs (umc28, csu68 and umc62) to map mutations responsible for diplospory in an apomictic form in a maize-*Tripsacum* hybrid (pg 1199-1202). The mutations would be "orthologous to genes involved in apomixis". The instant specification shows that csu68 is linked to *elongate* (pg 20, lines 11-18).

13. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kindiger et al (1996, Genome 39:1133-1141).

Kindiger et al used RFLPs and RAPDs to map mutations responsible for diplospory in an apomictic form in maize-*Tripsacum* hybrids (Table 2, paragraph spanning pg the columns on .

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1137, Fig 8, paragraph spanning pg1138-1139). The mutations would be “orthologous to genes involved in apomixis”.

14. Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by Pessino et al (1998, Hereditas 128:153-158).

Pessino et al used RFLPs to map mutations responsible for apospory in hybrid *Brachiaria* (Fig.1). The mutations would be “orthologous to genes involved in apomixis”.

15. Claims 1-5 are rejected under 35 U.S.C. 102(a) as being anticipated by Grimanelli et al (1998, Heredity 80:33-39).

Grimanelli et al used RFLPs, including umc28, csu68 and umc62, to map mutations responsible for dispolpory in tetraploid *Tripsacum* (Fig. 1; and paragraph spanning pg 36-37). Grimanelli et al also teach mapping *elongate* and *afd* in maize (pg 38, left column, paragraph 1). The mutations would be “orthologous to genes involved in apomixis”.

16. Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by Pessino et al (1997, Theor. Appl. Genet. 94:439-444).

Pessino et al used RAPDs and RFLPs to map mutations responsible for apospory in hybrid *Brachiaria* (Fig.3; paragraph spanning pg 442-443). The mutations would be “orthologous to genes involved in apomixis”.

17. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Hanna et al (US Patent 5,811,636, filed September 1995).

Hanna et al used RAPDs, RFLPs and STS markers to map mutations responsible for apospory in hybrid *Pennisetum* (column 19, line 58, to column 26, line 46). The mutations would be “orthologous to genes involved in apomixis”.

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18. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Kindiger et al (US Patent 5,710,367, filed September 1995) taken with the evidence of the instant specification.

Kindiger et al used RFLPs, including csu68, and RAPDs to map mutations responsible for diplospory in an apomictic form in maize-*Tripsacum* hybrids (column 12, lines 4-33; column 19, lines 17-63; claim 7, Fig. 3). The mutations would be "orthologous to genes involved in apomixis". Kindiger et al also tagged a mutation with the Mu transposon (column 12, line 42, to column 13, line 22; column 20, lines 49-58). The instant specification shows that csu68 is linked to *elongate* (pg 20, lines 11-18).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kindiger et al (US Patent 5,710,367, filed September 1995).

The claims are drawn to a method comprising mapping *elongate* and transposon tagging it.

The teachings of Kindiger et al are discussed above. Kindiger et al do not disclose tagging the mutation linked to csu68 (*elongate*) with the transposon.

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the method of transposon tagging mutations linked to apomixis as taught by

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Kindiger et al to tag the mutation linked to csu68 (*elongate*). One of ordinary skill in the art would have been motivated to do so because suggestion of Kindiger et al to tag genes associated with nonreduction and apomixis (column 12, line 42, to column 13, line 22).

Conclusion

21. No claim is allowed.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne R. Kubelik, whose telephone number is (571) 272-0801. The examiner can normally be reached Monday through Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones, can be reached at (571) 272-0745.

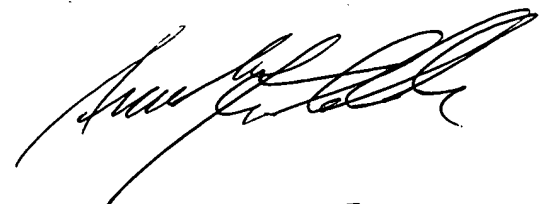
The central fax number for official correspondence is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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Anne R. Kubelik, Ph.D.
August 30, 2005



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PRIMARY EXAMINER